ELECTRICAL STARS.

By H. Gernsback.

It is surprising to find that almost every other amateur or experimenter never saw or heard of the wonders of a revolving Geissler tube, producing the marvelous electrical stars, although he has in his possession all the apparatus needed to produce them.

The majority of our readers are well acquainted with the Geissler tube, but to most of them, possibly, the thought never occurred to revolve a tube at high speed while in operation. At first thought we would be led to believe that a revolving tube would not look any different than one at rest, which is possibly the reason that very few try the experiment, but let them "discover" it and they will sit for hours in front of a silently revolving tube, watching the ever-changing stars.

When a tube is made to revolve at high speed and the vibrator of the spark coil works very fast, we see a luminous circle of various colors, depending of course on the natural colors of the tube. As the tube is revolving too fast, the eye cannot follow it,

and the consequence is that the colors "mix" or mingle producing new colors and new effects. This is especially true of the Geissler tube containing fluorescent liquids.

If we now screw the coil vibrator back, (slowing down its speed) we will at a certain point find that we have a seemingly slow revolving star which may have 8 to 16 corners. If the speed of the vibrator is reduced still further, we can get a 4 or 8 cornered star which is "standing still" despite the fact that the tube is revolving at high speed. The strangest part, however, is that sometimes while we look on the

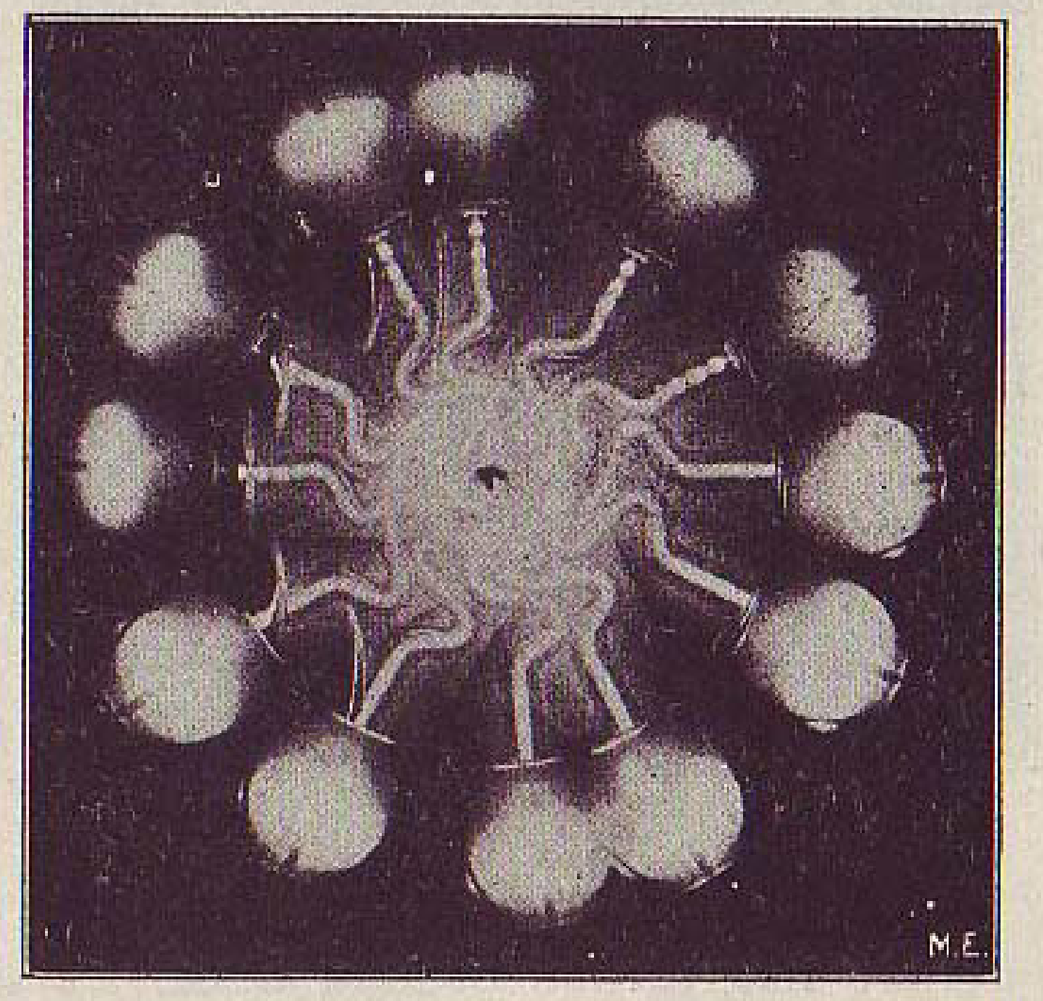

Figure 1

direction of the star is reversed, revolving in the opposite direction of that of the motor.

To understand how this is brought about, we have to remember that the current of a spark coil passing through the tube is not continuous, but is interrupted

all the time by the interruptions of the vibrator. While the tube is at rest we fail to observe these interruptions, as they are too fast for our eye to follow. It is the same with an electric bell; the clapper of same is striking so fast that our ear cannot hear each stroke, and a continuous sound is the result.

In the rotating tube we are made to see the interruptions, as if for instance four interruptions occur

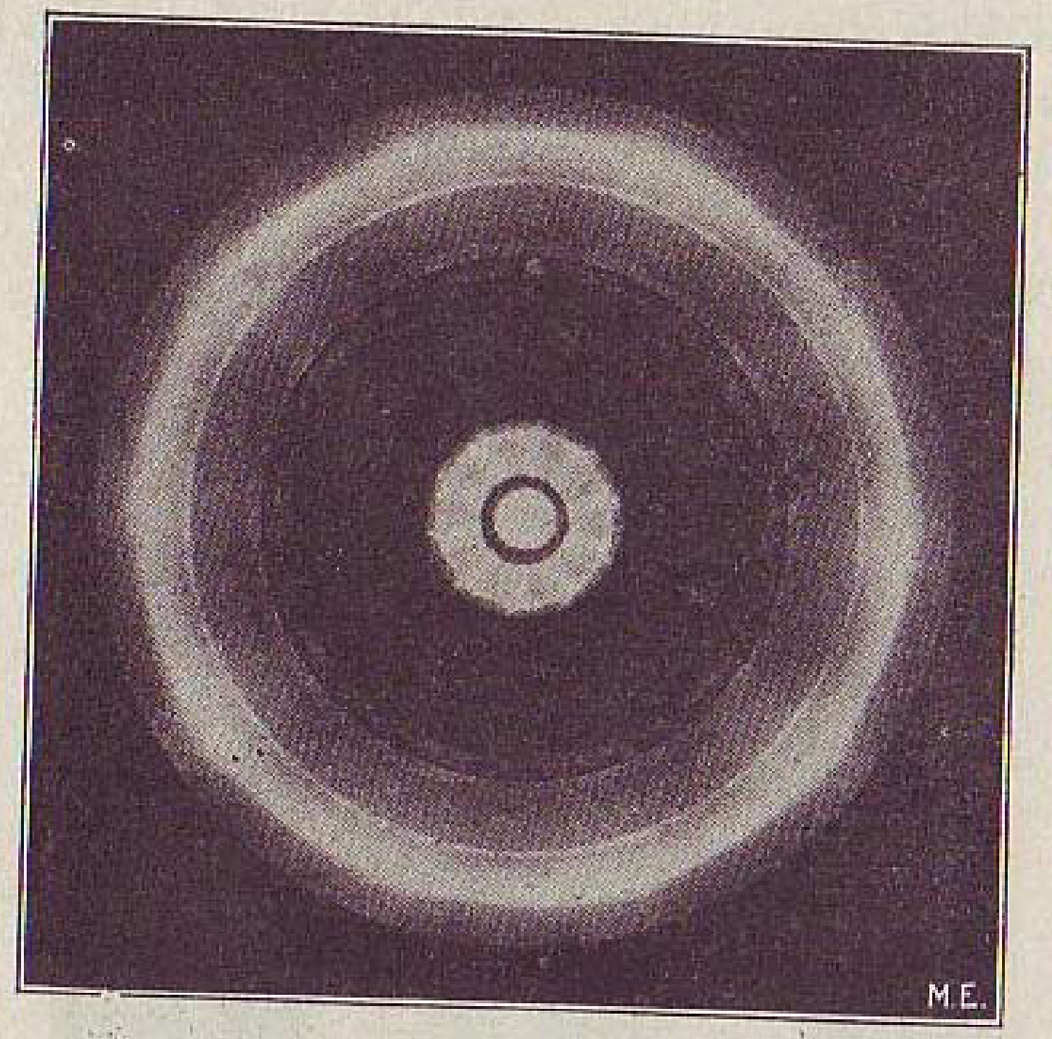

Figure 2

while the tube has turned around once, we must of course see four tubes at practically the same time. Therefore, if there are four interruptions to one revolution we see an 8-cornered star (each tube having two ends). If we have eight interruptions we shall see a 16-cornered star, and so on.

If the interruptions of the vibrator per second are less fast than the revolutions of the tube per second, the star will obviously turn backward.

If the speed of the tube and that of the vibrator is the same the star will stand still (Fig. 1). Fig. 2 shows the tube as it appears under very fast vibrations. The photographs, however, cannot do the tubes justice, as we cannot take an instantaneous photograph on account of the weakness of the light of the tube.

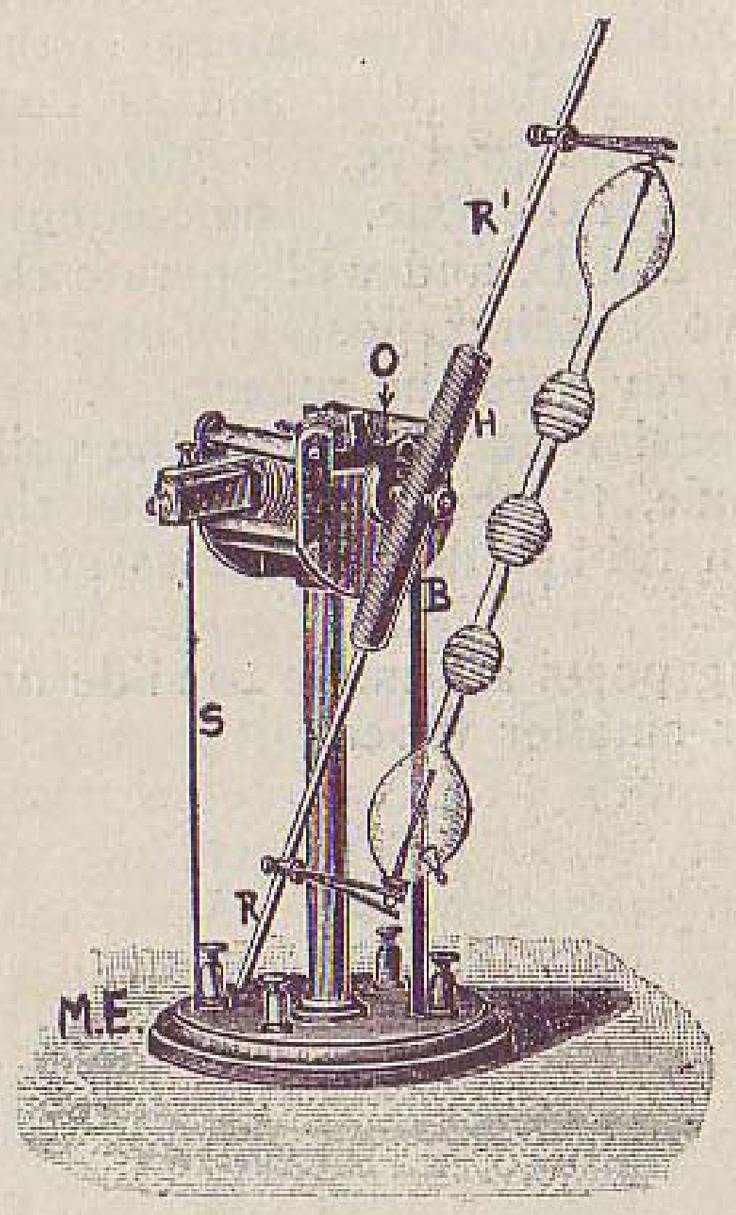

Figure 4

As for the apparatus to revolve the tube, an ordinary small battery motor, raised, so that the tube does not touch the table, is used (Fig. 3).

The axle of the armature should be lengthened to allow a rubber disc O of about one inch diameter to be fastened on same. This disc has a groove around its circumference so that a copper wire can be laid